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A RE-EVALUATION OF THE MEANINGFULNESS OF ALL POSSIBLE CVC TRIGRAMS

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For too many years we psychologists who are interested in verbal learning have been using scales of meaningfulness of questionable validity. The most frequently referred to study of the association value of nonsense syllables has been that by Glaze (1928). Especially since only its results have been reported in a more readily available secondary source (Hilgard's chapter in Stevens, 1951), the shortcomings of the original study are usually unknown. The Glaze study had but 15 subjects (*S*s); many nonword, three-letter combinations were omitted from the listing; 29 items had two association values (which also raises a question of the precision of estimation of the single-valued items); and the manner of *S*'s responding may have placed some differential constraints on reporting associations since *S* had to verbalize them to the experimenter (*E*). Another and slightly more recent study has been used somewhat less (Krueger, 1934). This study had some advantages over Glaze's, but it also had some inadequacies. Although a total of 586 *S*s served in it, not all *S*s judged all syllables; instead, each association value was based on 200 *S*s. And although the *S*s wrote the syllables and their responses to each, they also had in view up to 49 of their previous responses. The considerably higher values reported by Krueger might have been due to the recognition of associations among the items in view and to the fact that *S*s were allowed considerably more time to respond than in either the Glaze or the present study. Furthermore, the first 100 responses were considered practice, and apparently the responses to these were discarded. As will be evident from the present study, the most serious fault was the failure to take into account the wide differences among individuals. If the final values do not represent the averages of all *S*s, the association values for individual items will not be comparable.

An additional reason for the present re-evaluation is that, since the above studies were made, an indeterminate number of so-called nonsense syllables have become acceptable words, slang expressions, and abbreviations.

This study is a re-evaluation of the meaningfulness of all possible three-letter combinations of the Roman alphabet of the form consonant-vowel-consonant, with the restrictions that the two consonants are different and neither is a y when y is the vowel. Because it seems incongruous to perpetuate the self-created paradox of talking about the meaningfulness of nonsense syllables, it is herewith proposed to call these combinations "trigrams," and in view of their form to further specify them as "CVC trigrams."

Since the determined meaningfulness might be a function of the verbal fluency of the *S*s and furthermore the two sexes might respond differently to a particular trigram, the fluency of the *S*s was measured and cognizance taken of the sex of the respondents.

Procedure

Materials. There are 2,480 possible combinations of three letters of the Roman alphabet which meet the restrictions mentioned above. These trigrams were arranged in eight groups of 300 and one group of 80.

[1] The writer is indebted to Nancy L. Westby, who gave considerable assistance in the preparation of the materials and in the running of the subjects, and to the Numerical Analysis Laboratory of the University of Wisconsin, without whose facilities this study would have been impossible.

The orders were partially determined by Glaze's values. In order to prevent the establishment of artificial anchoring points, two restrictions were imposed on the sequence of presentation of the items: (*a*) where possible, successive items were of different association values and (*b*) successive items had no letters in common. Each of the nine sets of trigrams was made into a 16-mm. film strip with a blank space between successive items.

Method of presentation. The film strips were presented to groups of *S*s which varied in size from 12 to 24. The order of presentation of the film strips was determined by the rows of two different 9 × 9 latin squares, i.e., there were 18 sequences of film strips. Therefore, although the order of presentation of items was fixed within a film strip, the order of film strips was varied to prevent the establishment of artificial anchoring points. To obtain a check on reliability of judgment the first film strip was repeated after all others had been presented. Therefore *S* saw 2,780 or 2,560 items, depending upon the length of his first film strip.

The film strips were presented at a rate of 2 sec. per frame, except for the first 15 items in the first session. Since there was a blank space between successive trigrams (to encourage independent judgments), the usual time allowed for responding was 4 sec. The first 15 items in the first session were presented at a slower rate of 3 sec. per frame in order to assure that all *S*s could learn the required responding routine.

To aid *S* in keeping his place on the recording sheet, every fifteenth item was signaled. The scoring sheet had 30 15-item columns. In the blank space immediately preceding the first trigram a large "1" was printed in ink directly on the film. Between the fifteenth and sixteenth items a number "16" was likewise printed. Similarly, 31, 46, 61, etc. were printed. This method of printing was used to make the numbers obviously different from the trigrams. The numbers appeared as black on a grey background, while the trigrams were white on a grey background. If, in spite of the special numbering, *S* lost his place, his instructions were to "get in step" at the start of the next block of 15. After the complete showing of the film strip a specific section was repeated if needed. This was seldom necessary. The signaling system seemed adequate, and the *S*s proved quite adept at keeping their places.

An IBM form with 300 Y-N answer spaces was issued to each *S* before the start of each film strip. The sheet bore the number of the film strip he was about to see. Each *S* recorded his name, date, age, and sex on the sheet before the film strip was shown.

Subjects. A total of 335 University of Wisconsin students from several introductory psychology courses served in the study. For various reasons the data for 16 *S*s were discarded. The final, otherwise unselected, sample had 185 women and 134 men. Because the sequence of presentation of film strips proved significant, the final computations are based on 18 matched groups of 12 *S*s each ($N = 216$). In this final sample the mean ages of the men and women were 20.8 and 19.2 years, respectively.

Task. In order to maximize the *S*'s interest and motivation, the author (who also was a course instructor for many of the *S*s) gave a 15-min. explanation of the importance of the study, emphasizing why great care should be taken in making each response. Before the first film strip was presented, the *S*s were told that they were to pronounce each trigram to themselves and ask themselves the following questions: "Is it a word? Does it sound like a word? Does it remind me of a word? Can I use it in a sentence?" They were instructed to mark the scoring sheet in the "Yes" column if they answered "Yes" to any of the questions. If they could not answer "Yes" to any of the questions, they were to make a mark in the "No" column on the scoring sheet.

After each film strip the *S*s were given a 5-min. rest. Before each subsequent film strip the author again reminded the *S*s of the criteria for scoring an item as meaningful. In addition, they were urged to maintain their standards throughout the study. The *S*s saw 900 or 980 trigrams on

each of three consecutive days. Sixteen of the groups were run in the evening; two were run in the afternoon.

Fluency test. After the showing of a film strip on the second day, the *S*s took a short verbal fluency test. The *S*s were instructed to write all of the words in the English language they could think of which began with the letter "s" and which were not proper nouns. They were allowed 5 min. at this task. Any questions about the task were deferred until the end of the experiment.

General conditions. The study was conducted in a classroom; and, to minimize interaction among *S*s, they were encouraged to spread out. The trigrams were projected onto a screen at the front of the room. For the evening sessions, only the overhead lights in the rear half of the room were used. This provided enough light to mark the scoring sheets, but the screen was dark enough to make the trigrams legible. The projected trigrams were about 5 in. high.

Either the author or Westby was in the room at all times during the showing of a film strip. The *E*s deliberately showed interest in the *S*s' work so as to maintain motivation and interest. After the first 1,000 or so trigrams, judging of meaningfulness got to be a less than exciting task. If, however, any *S* showed evidence of carelessness, persistently communicated with a neighbor, or was unable to keep his place on the recording sheets, his data were discarded. There were 16 such cases in all. In a few cases *S* would accidentally skip a column in his recording. The standing instructions were to continue the task and record the last column on the reverse side of the scoring sheet. The record was then transcribed correctly by the *E*s.

Results and Discussion

Fluency. The correlation between number of words written on the fluency test and number of trigrams recorded as being meaningful (as defined previously) was computed for men and women separately. The obtained values were .128 (for 134 men) and .138 (for 185 women). Neither correlation is significantly greater than .000. If, however, the correlation is computed without regard to sex of the respondent, the value is 0.142 ($N = 319$), $.05 > p > .01$. The higher correlation is due to the increased range of fluency scores. The overall range of fluency scores was from 19 to 94 ($\sigma = 13.63$, $M = 53.01$).

Incidentally, there was a significant difference between the two sexes on the fluency test. Women wrote 55.4 words in 5 min., while men wrote only 49.7 ($t = 3.672$, 317 *df*, $p < .001$).

Meaningfulness. Before determining the percentage of *S*s reporting a trigram as meaningful, it was necessary to check on the effect of two potential variables: sequence of viewing and practice. Even though the film strips were made so as to minimize any anchoring effects, there was the possibility that the sequence of viewing the film strips could lead to differing levels of judgment of meaningfulness. In addition there was the possibility that the criterion of meaningfulness used by the *S* might change as a function of practice in the study.

In order to test the effects of sequence and practice, the data from 18 groups (corresponding to sequences of film strips) of 12 *S*s each were assembled. Although fluency was not highly correlated with the reporting of a trigram as meaningful, the groups were assembled so as to have nearly equal levels of fluency; and although it was not possible to have an equal number of each sex in *each* group, the total of 216 data sets were for an equal number of men and women.

The range of average number of "Yes" responses for the 18 sequences was from 980 to 1,678. In an analysis of variance the differences among the 18 sequences were significant ($F = 3.664$, 17 and 198 *df*, $p < .01$). Two conclusions are possible: (*a*) the groups were unequal in their disposition to judge the trigrams as meaningful and/or (*b*) the particular sequences of viewing altered this disposition to judge the item as meaningful.

In either case it seemed imprudent to ignore the effect of sequence and use a disproportionate number of *S*s from any one

sequence. Therefore all sequences were given equal weight, and only the data for the *S*s appearing in the just described split-plot analysis of variance were used in the final determination of association values. Regrettably this meant using the data for only 216 *S*s rather than the 319 cases available. Though this may appear to be grossly inefficient, it seemed desirable in order to assure a reasonably good unbiased estimate of association value. The loss in precision was not very great: assuming an association value of 50%, the $\sigma_{\%}$ is 3.4 for $n = 216$, whereas it would be 2.8 for $N = 319$. Even the former is a considerable improvement over Glaze ($\sigma_{\%} = 12.9$, for $N = 15$).

Practice in making the required judgments also proved to have a significant effect upon the likelihood of regarding a trigram as meaningful. The mean percentages of trigrams judged meaningful as a function of the order of viewing film strips were: 54.1, 53.6, 53.5, 52.8, 53.6, 54.4, 56.1, 57.0, and 56.8, from first to last, respectively. Though the change was not great, it was significant ($F = 5.150$, 8 and 112 *df*, $p < .001$). This result suggests that *S*'s criteria shifted with practice; and since the terminal values are higher than the initial ones, it may also be that *S* became more imaginative and willing to judge an item as meaningful.

Because of the matching operations performed in constructing the sequence groups, it would be meaningless to test for a sex difference in association value for the matching group data. Probably a better test is to compare the initial, unselected sample of 319 cases. Women were slightly more inclined to judge a trigram as meaningful than were men, 1,402.7 vs. 1,358.4, respectively. The difference was insignificant, however ($t = 1.024$, 317 *df*, $p > .05$).

To illustrate the nature of the individual differences observed in the present study, the frequency distribution of *S*s judging various numbers of trigrams as meaningful (out of a possible 2,480) is shown in Figure 1. For simplicity the data were grouped in intervals of 50.

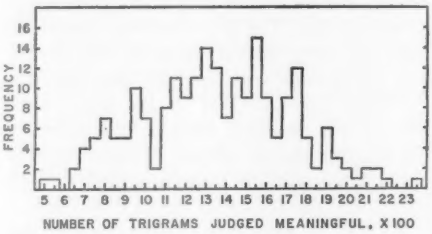

FIG. 1. A frequency distribution of the number of trigrams judged meaningful (maximum possible was 2,480) for the 216 *S*s (108 men and 108 women) whose data appear in the final tabulations. (Since there was no overall difference between the sexes, a single distribution is shown.)

The main results of the present study are shown in Table 1. The trigrams are arranged alphabetically within each level of association value found in the present study. All of these values are based on the responses of 108 men and 108 women.

TABLE 1

ASSOCIATION VALUES OF TRIGRAMS

Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger
XYH	1	0	19	XYJ	2	0	21	XEJ	3	0	18
				XYQ	2	7	23	XIW	3	0	16
XAZ	2	13	39					XOV	3	13	36
XIH	2	0	30	GYQ	3	0	34	XUF	3	13	23
XIJ	2	7	29	QUJ	3	0	22	XUJ[a]	3	13	22
XOJ	2	7	14	QYJ	3	0	18	XUQ	3	7	19
XYB	2	0	36	XEF	3	0	23	XUY	3	0	29

[a] Significant sex difference.

TABLE 1—Continued

Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger
XYF	3	0	22	XUD	6	7	51	ZIY	8	13	42
XYV	3	0	30	XUG	6	20	42	ZUF	8	7	54
YIJ	3	13	24	XUS	6	20	50	ZUY	8	7	36
ZOJ	3	0	41	XYK	6	0	34				
ZYJ	3	[b]	19	XYM	6		30	BYW	9	—[c]	52
				XYN	6	47	40	GEJ	9	20	40
KYJ	4	7	38	XYR	6		32	GEX	9	0	38
QOJ	4	7	29	ZEJ	6	0	42	KYF	9	7	46
XIY	4	7	19	ZIH[d]	6	7	55	KYG	9	7	56
XOY	4	27	47	ZYX	6	20	56	PYV	9	7	63
XUH	4	0	24					QUV	9	27	52
XUV	4	0	26	BYJ	7	13	54	QUX	9	33	43
XYW	4	7	30	CYJ[d]	7	20	42	QYB	9	13	50
YEJ	4	27	54	DYJ	7	40	51	TEJ	9	40	52
YEQ	4	33	35	GYJ	7		37	VIJ	9	40	43
ZIJ	4	27	46	HYJ	7	13	61	VUJ	9	27	49
				KUJ	7	33	48	XEC	9	33	40
JYH	5	7	45	KYH	7	0	51	XID	9	13	50
JYQ	5	0	41	LYJ[d]	7	27	49	XOC	9	20	45
MYV	5	0	43	NIJ	7	20	55	XOG	9	27	39
QIJ	5	0	40	NYJ	7	7	58	XOL	9	27	47
QYV	5	7	59	QYF	7	0	43	XON	9	13	55
VYJ	5	0	24	QYW	7	20	39	XOT	9	27	74
XAH	5	7	27	SYJ	7	13	46	XUN	9	53	51
XAJ	5	7	42	VYF	7	0	64	XUR	9	0	45
XEG	5	13	34	XAD	7	0	42	XYT	9	7	53
XEH	5	0	23	XEW	7	20	48	YAJ	9	93	
XIF	5	7	41	XEZ	7	7	36	YAV	9	7	49
XIQ	5	7	39	XOH	7	20	40	YIX	9	7	34
XOZ	5		30	XOK	7	20	43	YOJ	9	20	23
XUK	5	0	35	XOP	7	27	45	YUF	9	0	49
XUW	5	0	32	XUL	7	7	51	YUJ	9	7	37
XUZ	5		34	XUP	7		37	ZYQ	9	0	42
XYC	5	20	32	XYG	7	7	28	ZYS	9	0	70
XYD	5	7	37	YIV	7		23				
XYS	5		42	ZYF	7	13	49	FAJ	10	33	55
YEV	5		36	ZYH	7	13	33	FYQ	10		51
ZUJ	5	13	30	ZYW	7	0	31	GYC	10	13	—[c]
								HIJ	10		74
GYX	6	27	52	CIJ	8	0	44	KYV	10	0	42
JYK	6	13	54	JYC	8	0	42	LUJ	10	47	59
QEJ	6	33	24	KIJ	8		51	MUJ	10	33	78
QIH	6	0	40	QEF	8	13	33	PYB	10	7	33
QYG	6	20	32	QIY	8	13	41	QAZ	10	—[c]	53
QYH	6		38	QOH	8	20	57	QEX	10	13	55
VUQ	6	0	25	TYJ	8	33	44	QIW	10	7	44
WYJ	6	27	62	WUJ	8	7	39	RYW	10	47	58
XEQ	6	0	42	WUQ	8	0	44	TUJ	10	33	62
XEV	6	27	28	XAB	8	7	45	VOF	10	27	30
XEY	6	13	35	XAF	8	20	31	VUF	10	7	39
XIB	6	33	36	XAW[d]	8	13	57	XIN	10	27	50
XIK	6	33	55	XEK	8		40	XIC	10	40	42
XIZ	6	27	30	XUB	8	7	43	XAQ	10	7	31
XOF	6	20	29	XUT	8	20	55	XOM	10	33	41
XOQ	6	20	53	ZAJ	8	7	51	XUC[d]	10	0	31
XOS	6		58								

[b] Blank space indicates trigram was not evaluated.
[c] Item has two values.
[d] Significant change in meaning.

TABLE 1—Continued

Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger
YIG	10	7	—[e]	DUJ	13	33	74	YUX	14	20	44
YOF	10	0	23	GIJ	13	47	54	ZEH	14	13	46
ZOQ	10	27	44	GOQ	13	0	54	ZUX	14	20	41
				JIH	13	20	44	ZYR	14	13	55
CYW	11	27	50	JIQ	13	7	60				
FEJ	11	47	66	JYT	13	27	77	BIW[a]	15	33	50
FEQ	11	27	46	JYX	13	—[e]	69	BUV	15	40	55
FOJ	11	20	62	KYB	13	20	57	CIW	15	20	57
GAQ	11	—[e]	61	MOJ	13	33	60	CUJ	15	20	57
GEQ	11	40	41	MYP	13	13	47	FYP	15	20	53
GIX	11	7	47	MYW	13	7	59	GIQ	15		44
GOJ	11	27	58	NUQ	13		63	KIH	15	13	63
GUJ	11		55	PYW	13		66	NEJ	15	20	55
GUQ	11	0	41	QEH	13	40	39	NUV	15	53	68
GYK	11	7	42	QEP	13	20	65	POJ	15		73
JYD	11		38	QUW	13	7	48	QOK	15	27	72
KUQ	11	13	63	TIJ	13	40	52	QUC	15	47	68
QAJ	11	27	37	VYH	13	40	29	RIW	15	40	51
VOJ	11	20	58	WIJ	13	40	61	VOQ	15	33	58
VYG	11	27	65	WOJ	13	7	45	VYQ	15	0	46
XEM	11	60	66	XED	13	33	53	VYT	15	20	65
XET	11	27	61	XEP	13	40	56	XEN	15	33	65
XIG	11	13	53	XIL	13		54	YIZ	15	27	61
XIM	11	27	41	XUM	13	0	60	ZEQ	15	0	35
XYL	11	13	55	YEB	13	27	30	ZOV	15	13	54
YEF	11	27	47	YEC	13	27	51	ZYK	15	13	45
YIQ	11	13	37	YIH	13	13	31				
ZOF	11	7	55	ZIW	13	0	31	BOJ	16	27	70
ZYC	11	13	56	ZOS	13	7	43	COJ	16	27	51
				ZUV	13	7		DIJ	16	40	64
CUQ	12	40	63	ZYB	13	7	46	DYB	16	27	
FYJ	12		59	ZYD	13	0	53	FYH	16	47	50
GOX	12	27	40	ZYV	13	0	43	GIW	16	0	67
JYZ	12	0	49					JYS	16	7	69
KOJ	12	7	50	FEP	14	20	45	KEJ	16	20	55
KYW	12	13	52	FYM	14		62	NYD	16		63
NOJ	12	13	63	HUJ	14	53	72	QEB	16	13	48
NYV	12	27	62	JEQ	14	7	48	QEC	16		48
QEV	12		44	JIY	14	27	74	RUV	16	47	50
QIF	12	0	44	LAJ	14	0	70	SUJ	16	53	61
QUH	12	—[e]	42	LYW[d]	14		65	VAW	16	47	51
SYW	12	47	56	QAH	14	27	33	VOH	16	13	39
TYV	12	33	43	QAV	14	40	68	VUH	16	7	38
TYW[d]	12	13	53	QIG[a]	14	47	55	VYR	16	47	60
VAJ	12	40	53	QOV	14	0	30	WUC	16	20	42
VEF	12	27	45	QUG	14	0	38	XAV	16	7	72
VUB	12	60	43	SIJ	14	0	53	YIB	16	13	39
VYB	12	7	53	VUP	14	33	44	YIF	16	7	56
WYB	12	20	58	VYW	14	7	47	YOX	16	7	49
XAL	12	7	53	WYV	14	7	66	YUQ	16	7	29
XER	12	60	55	XAN	14	53	54				
XIR	12	53	44	XAS	14	60	57	CEJ	17	7	38
XOB	12	13	38	XAT	14	0	49	FUV	17	33	49
XOD	12	40	50	XES	14	—[e]	65	GAC	17	53	72
XYP	12		41	XIS	14	40	38	GEC	17	7	42
ZUQ	12		39	YIW	14	7	38	GYW	17	7	67
				YOQ	14	7	41	JUQ	17	7	64
DEJ	13	20	36	YUB	14	13	46	KIF	17	27	47

TABLE 1—Continued

Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger
LIJ	17	27	53	JYW	19	7	51	GUH	22	20	57
LYG	17	40	78	KIW	19	33	48	HOJ	22		58
MEJ	17	13	63	KUY	19	13	58	KEH	22	20	62
MIV	17	13	51	LIW	19	20	69	KYQ	22	27	49
PEJ	17	33	49	NYW	19	27	63	MEF	22	0	44
QAG	17		53	PYJ	19		59	MIW	22	40	56
QAS	17	7	56	QOL	19		56	NIY	22	40	59
QEK	17	40	66	QOS	19	7	50	NYH[d]	22	33	74
QEZ	17	40	75	QOX	19	20	43	PUV	22	40	61
QOB	17	0	43	QOZ	19	53	71	QAB	22	40	60
QYX	17		55	QUF[d]	19		60	QAX	22	27	78
RYX	17	13	57	QUK	19	20	54	QET	22	47	72
TOJ	17	40	53	SOJ	19	33	75	QOW	22	7	49
VEQ	17	13	57	VOB	19	27	48	RIH	22	27	57
VUG	17	73	64	VUK	19	0	44	RYJ	22	13	74
VYZ	17	20	54	VUW	19	27	52	RYQ	22	20	58
WUX	17	—[e]	58	WYQ	19	33	75	SUV	22	—[e]	71
XAK	17	40	49	XAG	19	33	—[e]	TUV	22	13	68
XAY	17	20	59	XOR	19	27	59	TYB	22	53	66
XEB	17	7	22	XOW	19	47	46	VAB	22	47	46
YOB	17	47	62	YAF	19	47	—[e]	VAF[d]	22	0	57
ZEC	17	20	51	YEX	19	33	60	VEJ	22	13	57
ZIQ	17	0	34	ZEV	19	20	56	VUD	22	27	47
				ZYL	19	13	69	WIH	22	47	59
BYV	18	13	62					WOY	22	33	65
FYC	18	7		FIQ	20	47	76	XAP	22	20	45
FYD	18	33	78	JIC	20	0	51	YOV	22	0	39
GYH	18	20	33	NYZ	20	53	48	ZAF	22	27	48
HAJ[a]	18	40	64	PYM	20	47	74	ZEF	22	20	65
HYF	18	40		QED	20	20	72	ZUW	22	20	27
JUF	18	20	43	QOF	20	40	66	ZYN	22		73
JYR	18	33	74	VIH	20	20	69				
KYZ	18	—[e]	80	WEF	20	20	67	CIH[d]	23	40	38
MYB	18	20	45	WEQ	20	20	53	CUG[a]	23	40	61
MYJ	18	7	56	ZIF	20	0	60	CYH	23		49
NAJ	18	53	56	ZUH	20	7	43	GYZ	23	20	52
QOG	18	60	50					HIF	23	20	61
QYS[a]	18	27	—[e]	BIH[d]	21	47	47	JEX	23	0	58
RUJ	18	93	78	BUW[a]	21	47	67	KEQ	23		64
RYV	18	40	80	HYB	21	47	71	KIY	23	27	56
TIW	18	27	65	JEV	21	47	56	LOJ	23	27	74
VUX	18	7	54	JIK	21	13	45	MYZ	23	13	77
VUY	18	27	60	PIJ	21	47	73	QEG	23	27	54
VYD	18	87	59	QEM	21	7	52	QON	23	20	54
XAC	18	40		QOC	21	0	46	QUL[a]	23	27	73
XIV	18	0	42	QOP	21	27	43	QYC	23	73	79
YOZ	18	7	51	VIF	21	100	61	QYM	23		42
				WUB	21	0	54	TYG	23		72
CEQ[a]	19	33	51	XEL	21	53	73	VYX	23	7	76
DYW	19	13	68	YIL	21	0	57	WAJ	23	20	57
FYK	19	20	—[e]	ZIX	21	20	69	WYX	23	20	63
FYW	19	20	51	ZYT	21	0	65	YAB	23	13	50
GAX	19	0	55					ZAX	23	13	60
GIC	19	13	44	CAQ	22	40	59	ZIK	23	7	61
GUX	19	27	43	DAJ	22	33	44	ZOB	23	13	43
HIW	19		51	FIH	22	40	70				
HYG	19	67	77	FIW	22	27	64	BEJ	24	20	57
JOF	19	33	72	GIH	22	20	41	BIQ	24	40	76

TABLE 1—Continued

Trigram	Archer	Glaze	Krueger
BUH	24	27	66
BYQ[a,d]	24	27	64
CUH	24	13	68
GUW	24	20	53
HYW	24	20	51
JOM	24	33	65
KIV	24	—[e]	59
KYR[a]	24	33	73
MUB	24	47	62
PYD	24	20	53
QAP	24	0	57
QIV	24	67	71
QUB[d]	24	7	48
QUY[d]	24	33	52
RUQ	24	13	57
SEJ	24	33	72
YUG[d]	24	47	59
YUT	24	93	58
ZAV	24	33	68
ZOK	24	13	70
ZYM	24	—[e]	64
BIJ	25	53	58
BYP	25	33	43
CEH	25	13	45
CYB	25	40	60
CYZ	25	47	70
DAX	25	0	48
FIY	25	67	67
FOQ	25	13	64
FUP	25	20	38
FYV	25	7	74
HUQ	25	20	73
JEH	25	13	61
JYV	25	0	46
KAQ[a]	25	13	57
KEB	25	7	62
KOQ	25	33	55
KUW	25	40	57
MYF	25	7	57
NUY	25	47	63
NYQ	25	13	65
PEF	25	40	40
PYF	25	60	79
QIR	25	67	85
QOR[a]	25	47	67
QUN	25	—[e]	55
QYD	25	27	73
QYZ	25	33	68
RIJ	25	27	70
RUW	25	20	72
TOV	25	0	62
TYH	25	27	77
VUC	25	33	58
WOQ	25	33	60
XAR[a]	25	13	49
XIT	25		65
XYZ	25	47	79
YAD	25	47	43
YOD	25	33	63
ZAH	25	40	39
ZAQ	25	27	69
ZAS	25	13	55
ZEG	25	7	38
ZUB	25	7	60
ZUL	25	53	59
ZUN	25	40	77
BOQ	26	53	70
GIY	26	20	63
HYV	26	47	64
MAF	26	27	57
MUX	26	27	73
MYQ[a]	26	27	72
NIH	26	33	73
NIZ	26	27	63
NYB	26	20	78
PYH[d]	26	33	55
QAF	26	47	70
QES	26	87	85
QYR	26	27	74
SIW	26	20	71
VUR	26	33	61
XIP	26	—[e]	71
YED	26	27	59
YEK[d]	26	7	41
YUV[a]	26	0	37
ZID[d]	26	20	64
ZOC	26	27	59
ZOH	26	7	60
ZOY	26	—[e]	44
ZUG	26	47	—[e]
BAV	27	73	68
FEK	27	60	64
FOV	27	53	77
GEH	27		55
GYS	27	73	68
JUV	27	73	74
LEJ	27	27	75
MEQ	27	0	63
MIB	27	7	58
NAX	27	13	71
QOM	27	13	60
QUP	27	20	58
RUX	27	33	65
TOQ[a]	27	53	68
VAH	27	40	64
VEK	27	40	61
VIW	27	47	75
VOZ[a]	27	47	69
VYS	27	47	65
WUG	27	13	51
YAZ	27	7	79
YUD	27	0	39
ZEY[d]	27	20	66
ZOL	27	27	72
ZUK	27	0	63
CEF	28	0	64
DYH	28	27	41
DYT	28	47	78
LEQ	28	20	64
MIH[a]	28	47	70
NAF	28	33	62
PUJ	28	47	73
QUD	28	47	62
QYK[d]	28	40	88
VAQ	28	53	76
VUS	28	40	58
YIC	28	20	42
ZAL	28	27	65
ZEW	28	40	67
ZIB	28	20	57
ZOT	28	7	64
ZUC	28	27	61
CUY	29	53	71
GEF	29	13	71
JEG	29	20	66
JUH	29	7	71
JUY	29	47	83
KEZ	29	7	51
KUG	29	40	57
KUV	29	40	76
NIV	29	33	74
PIH	29		63
QIB	29	47	64
QUS	29	20	69
RYH	29	33	77
TUZ	29	33	68
VEH[a]	29	—[e]	61
VUT	29	47	60
WUK	29	33	73
WYD	29	53	85
WYH	29	20	67
YOH	29	13	63
ZOX	29	27	68
ZUD	29	27	58
CAJ	30	40	72
DOJ	30	53	73
FAQ	30	33	77
GIK	30	13	46
GYD	30		67
KAJ	30	13	59
KAX	30	27	62
KIG	30	20	65
KUH	30	20	64
LUY	30	20	72
NUX[a]	30	7	79
NYR	30	33	77
PUY	30	40	65
QYP	30	40	66

TABLE 1—Continued

Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger
RUY	30	20	56	CYV[d]	32	47	64	KEC	34	33	59
SYZ	30	33	75	DIW	32	20	72	LIH	34	27	71
VEZ	30	60	63	FIJ	32	80	74	MIQ[a]	34	53	74
VUM	30	20	66	FIK	32	40	65	MUH	34	33	70
WUH	30	0	57	GEK	32	27	40	MUP	34	40	75
YAX	30	53	62	HUV	32	80	79	NIQ	34	27	79
YIK	30		32	JIW	32	13	73	QAR	34	47	89
ZAB	30	33	53	KIQ	32	53	82	QOT	34	53	82
ZAW	30	13	79	KOH	32	40	68	TAH	34	20	62
				KUC	32	87	65	VIY	34		60
BEX	31	—[c]	52	LYH	32	33	67	VUZ	34	20	68
BOF	31	7	52	MEH	32	40	63	WOX	34		65
BYH	31	33	67	NAQ	32	27	64	YEM	34	0	64
CYQ	31	27	49	NOQ	32	47	76	YIN	34	13	—[c]
CYX[a]	31	27	63	QEW	32	7	67	YUW	34	20	63
DUY	31	53	75	QEY	32	20	70	YUZ	34	0	73
FUH	31	7	76	QYL	32	27	79	ZER	34	20	62
FUY	31	33	71	RIY	32	27	72	ZUP	34	7	82
FYS	31	53	78	RUH	32	47	86	ZUS	34	20	55
GAK	31	27	65	TAZ	32	67	60				
GEV	31	53	75	TEH	32	33	70	BAJ	35	53	73
GIZ	31	47	67	TUH	32	20	75	BYS	35	53	73
HYN	31		62	TYF	32	20	79	BYX	35	40	59
KAH	31	33	70	VYL	32	73	68	CIQ	35	33	77
KEF	31	20	57	YAG	32	27	53	COH	35	27	82
LUH	31	40	72	ZIC	32	20	58	DEQ	35	40	77
MEV	31	27	39					GAH	35	0	62
MIY	31	33	78	CAX[a]	33	40	73	JID	35	0	64
MYH[a]	31	40	68	DYF	33	47	78	JUB	35	67	77
NYM	31	67	70	FEG	33	47	69	JUW	35	47	81
PIW	31	7	73	GAJ	33	33	83	KUX	35	33	72
POB	31	47	55	HYX	33	27	66	MOQ[a]	35	40	91
PYQ	31		75	LYB	33	53	86	NUC	35		77
QEN	31	27	55	MEB	33	40	72	NUK	35	20	74
QUR	31	40	67	NYF	33	47	67	PEH	35	27	59
SAJ[a]	31	20	72	NYG	33	60	72	PIB	35	33	43
SYH	31	27	66	PYZ	33	27	64	QIX	35	53	74
TAJ	31	47	70	QOD	33	13	75	QOY	35	13	71
TEF	31	20	52	SYQ	33	20	63	QUM	35		47
VEB	31	47	58	TIH	33	40	69	QYN	35	—[c]	73
VEY	31	73	70	TUQ	33	33	76	SIH	35	20	78
VIQ	31	—[c]	70	TUY	33	47	78	SUQ[d]	35	27	87
VOP	31	27	69	TYS	33	40	69	SUW[a]	35	67	73
WUV	31	33	53	VYP	33	27	65	TEB	35	53	68
YEG[a]	31	80	86	WIB	33	33	58	TEY	35	33	81
YIM	31	0	50	WYK	33	53	75	TIV	35	20	51
YOL	31	27	63	WYS[a,d]	33	53	76	VEC	35	0	67
ZAY	31	33	70	ZEM	33	53	61	YIS	35	60	79
ZED	31	27	72	ZIS	33	13	76	YIT	35	47	71
ZET	31	53	54	ZYG	33	0	57	YUN[d]	35	20	67
ZIR	31	13	64					ZEX	35	0	63
ZOD	31	33	64	BYM	34		78	ZOG	35	13	65
ZUR	31	20	66	CUV	34	73	79				
				DIH	34	33	73	BUP	36	47	61
BUJ	32	27	82	DIY	34	60	79	CAZ	36	53	64
CEB	32	27	75	FUQ	34	27	81	COQ	36	47	77
CEG	32	53	69	GYF	34	27	68	CUX	36	13	59
CYF	32	33	60	JOZ	34	33	72	DYQ	36	13	68

TABLE 1—Continued

Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger
GED	36	13	64	PAZ	38	60	74	FUB	40	13	50
HOQ	36		87	REZ	38	33	77	GOK	40	20	72
JAF	36		73	RIQ	38	53	—[c]	GUB	40	27	69
JEC	36	13	68	RYS[a]	38	53	85	GYR	40	60	84
JIZ[a]	36	27	68	SIY	38	60	79	JUK[a]	40	60	76
MEP	36	47	61	SOZ[a]	38	47	69	JYL[a d]	40	47	91
NIW	36	47	61	SYV	38		82	KYC	40	40	66
NYS[d]	36	33	71	TEZ	38	47	65	LOZ[a]	40	53	79
QER	36		82	TUW	38	27	75	MOF	40	40	83
QUZ[a]	36	20	77	TYX	38	33	84	MYD	40	—[c]	80
REH	36	40	73	VYC[a d]	38	0	82	PAF	40	13	41
ROJ	36	27	73	VYN[d]	38	40	83	PEX	40	40	75
RUZ	36	27	61	WEC	38	60	61	QAN	40	67	77
SEH	36	33	73	WEM	38	53	69	RYL	40	60	82
TEQ	36		82	WEX[a]	38	53	86	TEV	40	13	43
VOR	36	33	62	WIQ	38	47	76	TIY	40	60	86
WUY	36	47	75	WOG	38	7	67	TOZ[a]	40	40	69
ZES	36	40	71	WUM	38	60	84	VIB[a]	40	13	63
ZOP	36	20	70	XAM	38	87	88	VUN[d]	40	33	72
				YOG	38	40	55	WYZ	40	53	90
BIY	37	33	77	YOP	38	0	56	YUS[d]	40	20	85
BOV	37	73	75	YOS	38	40	73				
FEC	37	47	70	YOT	38	13	66	BEQ[a]	41	67	68
GYB	37	27	79	ZAD	38	47	72	BYF	41	33	84
GYT	37	40	75	ZEN	38	47	58	BYZ	41	73	79
HYZ	37	13	75	ZUT	38	13	58	DIQ	41	27	80
JUC	37	13	69					FOZ	41	60	74
JUX	37	27	63	CIZ[a]	39	33	66	GEP	41	33	63
JUZ	37	20	75	CYM	39	60	75	GOH[a]	41	47	74
KYP	37	33	81	DOY	39	80	77	HEZ	41	33	71
LYQ	37		81	GIS	39	67	83	HIG	41	87	73
MIJ	37	47	69	GOC	39	33	62	HUW	41	13	69
PUX	37	40	68	GYV	39	33	74	JAT[a]	41	20	61
QAT	37	53	76	HUY	39	40	70	JIR	41	53	65
QAW	37	60	64	HYQ	39	7	77	KAG[a]	41	27	71
QIM	37	7	58	JEK	39	40	79	LYF	41	80	93
TEG	37	27	74	JOW	39	73	85	NEM	41	60	85
VAK	37	20	84	JUP	39	73	74	NIS	41	60	60
VED	37	33	50	KAZ	39	20	67	POQ	41	33	72
ZAK	37	53	77	KEX	39	13	57	QAY	41	40	85
ZIL	37	0	71	LUW	39	47	73	QYT	41	47	82
				NEZ	39	67	71	SEF	41	60	66
BAZ	38	40	71	PIY	39	13	66	SUY	41	33	69
BUQ	38	20	71	QUT[a]	39	40	81	SYF[a]	41	40	83
CEV	38	33	73	REJ	39		70	TIQ	41	53	87
CUW	38	40	61	TUP	39	67	76	VAX	41	80	83
CYG	38		61	TYQ	39	20	67	WEH	41	47	76
DAQ	38	7	54	TYZ[a]	39	13	71				
DYV[a]	38	67	88	VAD	39	7	76	BEW	42	47	64
FEH	38	0	55	VYK	39	67	71	FEX	42	47	81
FUW	38	47	75	WAB	39	67	77	FIM[d]	42	73	62
HEQ	38	27	78	WEZ	39	7	72	FIP	42	53	75
LOQ	38	53	92	WYC	39	60	79	GEB	42	20	64
MAQ[a]	38	47	85	ZIV[a]	39	7	60	GEZ	42	47	71
MUQ	38	33	77					GOW	42	47	80
NIR	38	47	79	CAH	40		74	GUD	42	40	89
NOF	38	40	70	CEK	40	40	66	GUV[d]	42		86
NUH[a]	38	53	68	CIY	40	60	64	LUQ	42	53	87

TABLE 1—Continued

Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger	Trigram	Archer	Glaze	Krueger
MIP	42	33	58	HAQ[a]	45	47	86	CIF[a]	48	67	69
NEQ	42	40	81	HEG	45	20	81	CUK	48	60	78
PUH[a]	42	40	72	JOH	45	60	80	CYS[a d]	48	33	89
PUQ	42	40	83	JOX	45		69	DUQ	48	67	85
QID	42	20	78	MOG	45	40	84	DYR	48	73	86
RYZ[a]	42	40	85	MOY	45		73	GYL	48	60	89
VAZ	42	33	84	MUY	45	40	70	HEJ	48	27	76
VOK	42	53	73	MYG	45	67	66	HIV[d]	48		83
WEJ[a]	42	40	80	PEM	45	33	68	KAC[a]	48	73	67
WIY[a]	42	27	76	POV	45	53	73	KIZ	48	20	78
				QIC	45	73	83	MUW	48	13	77
FOH[a]	43	33	56	TEP[a]	45	87	86	MYC[a]	48	33	72
FUJ	43	40	85	WOB	45	53	71	MYK[a]	48		82
FYZ	43	60	81	WYG	45	27	83	NOY	48	47	79
GOY	43		77	WYM	45	60	78	PAJ	48	53	65
HIY	43	60	79	YUH	45	27	75	POY	48	53	79
PUW	43	33	72					QAD	48	40	—[e]
QEL	43	60	78	CYK	46	33	76	QAL	48	73	79
RIX	43	13	63	DYS	46	67	76	REW	48	73	74
SYB	43		82	HUZ	46	47	92	SEB	48	13	51
VAY	43	53	75	KEV	46	20	46	VEP	48	20	65
WIV	43	73	81	KYS[a]	46	60	88	VUL	48	60	93
YAN	43	40	64	LIG	46	73	89	WYF	48	40	88
ZAN	43	40	65	LIX	46	—[e]	90				
ZON	43	33	74	LIY[a]	46	73	87	BIV	49	40	60
				LYS[a]	46	53	92	BYG	49	60	83
BEH	44	20	63	NEP	46	73	86	KYL[a]	49	40	93
BEZ	44	60	77	PEV	46		66	LEB	49	20	62
DEH	44	27	71	TOH	46	33	74	MUZ	49	73	87
DOQ	44	33	87	TYD	46	60	83	NEF	49	47	72
DUT	44	80	86	VEM	46	67	81	NUS	49	60	77
DYX	44	33	82	VOX	46	60	81	QIP[a]	49	60	76
DYZ	44	60	88	YAT	46	47	79	SOQ	49	47	86
FAP	44	53	60	ZEP	46	53	91	WYL[a d]	49	—[e]	88
HIB	44	73	77								
JAH	44		75	BYK	47	67	73	BEM	50	60	65
JOR[d]	44	80	80	CIB	47	27	64	CYR	50	53	81
JYB	44	27	65	FUX[a]	47	33	87	DIB[a]	50	40	77
KIB	44	53	79	GOM	47	67	87	DUH[a]	50	27	60
NID	44	33	60	GUC	47	13	46	FAH	50	47	70
NUJ[d]	44	27	80	HIQ	47		88	FOW	50	80	85
PEQ	44	47	78	JYF	47	40	76	GUK	50	7	50
PIV	44	53	75	LYX	47	73	91	HYL	50	60	84
QAM	44	20	69	MYX[d]	47	53	86	JIS	50	47	74
QIS	44		—[e]	QAC	47	73	90	JYN	50	87	95
RAJ	44	87	90	QIZ	47	87		KES	50	60	83
RUK	44	47	76	RAX	47	67	90	KYN[a]	50	60	85
RYC[a]	44	67	63	RUC	47	33	65	KYX	50		78
RYF	44	67	80	RYG	47	53	86	LAH[a]	50	47	77
RYK	44	27	70	SIQ	47	53	89	LOH	50	67	80
SEQ	44	67	86	SUG	47	87	89	LUF	50	67	94
WIX[a]	44	27	87	TOF	47	53	89	MAB	50	80	81
WYR	44	60	78	TUD[d]	47	47	68	MOX	50	20	76
YIR	44	40	66	TUL	47	87	82	NUZ[d]	50	53	68
YOC	44	27	62	VYM	47	47	89	POZ[a]	50	47	81
				WUP	47	13	72	PYR	50	80	87
DEG[a]	45	67	71	YAQ[a d]	47		52	QIK	50	67	91
GOZ	45	60	72	ZIN	47	13	69	QIN	50	33	75

TABLE 1—Continued

Trigrams	Archer	Glaze	Kreuger	Trigrams	Archer	Glaze	Kreuger	Trigrams	Archer	Glaze	Kreuger
ROH	50	67	82	JYG	53	47	77	BUX	56	87	93
SAH	50	60	81	LER	53	53	86	CIM	56	73	82
SOH[a]	50	53	87	LUP	53		84	CYP[a]	56	53	76
SYX	50	67	80	LYV[a]	53	60	87	DEV	56	80	92
VID	50	40	57	MEK	53	67	88	FYB	56	60	92
VOD	50	47	68	NIF	53	60	88	JAV	56	87	91
WOH	50	40	83	NIM	53	67	74	KOV[a]	56	60	71
				POF	53	67	58	KYM	56	27	70
BAQ[a]	51		83	POG	53	—[c]	66	LYM[d]	56	67	89
BYC	51	73	85	PYT	53	73	90	PAQ	56	27	88
CEP	51		76	PYX	53	47	88	PEB	56	87	89
DOH	51		75	VIT	53	67	88	PYC[d]	56		90
HAX	51	47	89	WUL[a]	53	80	77	WEG	56	40	86
JOP	51	67	80	ZIM	53	47	64	WYP	56	53	81
NAZ	51	80	80	ZIT	53	33	79				
PEZ[a]	51	33	67					BYN	57	67	86
SUF	51		95	CAG	54	73	85	CES[a]	57	47	78
SUX	51	40	86	FYL[d]	54	67	87	DYP	57	53	—[c]
TAQ	51	67	91	FYX	54	60	83	FAV	57	93	92
VIZ	51		92	GAW	54	27	67	HYC[a]	57		75
YOM	51	7	63	KEW[a]	54	73	81	HYR[a]	57	47	81
YUC	51	27	53	KOS	54		95	JEZ	57	20	82
				KUN	54		80	LYC[a]	57	80	89
BYR	52	47	87	LUT	54	67	89	MOH	57	40	84
DAK	52	47	72	MYN[a]	54	60	89	MYL[a]	57	67	87
FAW[d]	52	67	76	NUP	54	73	73	NAL	57	40	73
FID	52	73	94	PID	54	33	65	PIF	57	73	92
FOT	52	80	86	PUZ	54	93	79	PIM	57	60	75
GEY	52	47	85	QAK	54	73	96	TYC	57	—[c]	91
GIF	52	67	86	RAQ[a]	54	73	91	WOV	57	73	84
HEB[a]	52	47	80	RYN	54	80	87	ZAC	57	27	77
HEF	52	47	87	SOV[d]	54	93	89				
JEY	52	33	65	WEV[d]	54	100	78	BEP	58	13	64
JIV[d]	52	27	54	WOS[a]	54	20	74	BYT[d]	58	53	82
JOQ	52	27	88	YEZ	54	53	95	DYL[a]	58	53	88
KUL	52		84	ZYP	54	33	90	JEP	58	47	77
LEH	52	47	77					JIX	58		81
LEK[d]	52	87	84	FAZ	55	47	82	KET	58	87	93
LEZ	52	33	84	FOC[a]	55	73	73	LAQ	58	73	97
MEZ	52	20	84	HOZ	55	33	83	LOY	58	93	87
MIF	52	7	60	HYT	55		88	LUD	58	40	85
NOH[a]	52	53	73	JIT	55	67	84	MAV	58	60	74
NUW	52	27	89	JOD	55	33	73	MIZ	58		88
NYK[d]	52	53	80	JUM	55	87	90	MYR[a]	58	80	92
POH[a]	52	20	75	MUV	55	60	80	NYP	58	40	87
ROQ	52	87	91	MYS[a]	55	93	94	PYK	58	53	83
SAZ	52	60	84	NAS	55	80	91	QIL	58	100	89
SYG	52	60	68	PIQ	55	73	89	RYB	58	67	82
TAY	52	60	89	SUH	55	40	87	SEK	58	80	87
VOS	52	67	76	SYK	55	67	91	SYM	58	73	94
ZAR	52	67	79	TUS	55	80	84	SYT[a]	58	60	90
ZEK[a]	52	73	60	VES[d]	55	100	90	TAS	58	80	87
				WUD	55	80	80	WEK[a]	58	60	72
BOH[a]	53	60	78	WYT	55	53	87	YID	58	40	84
CYL	53		87	ZAT	55	13	83				
DEZ	53	67	67	ZEL	55	33	74	BAF	59	73	89
DUW[a]	53	40	77	ZUM	55	0	74	BOC	59	87	82
FEV[d]	53	93	88					BYL[a]	59	7	85

TABLE 1—Continued

Trigrams	Archer	Glaze	Kreuger	Trigrams	Archer	Glaze	Kreuger	Trigrams	Archer	Glaze	Kreuger
CEW	59	60	79	DAC	62	40	89	PYL[a]	64	87	94
CEY	59	40	78	FIS	62	80	87	RIK	64	53	83
CIX[a]	59	60	67	FOM	62	80	75	RIS[d]	64	87	85
DOF	59	73	77	FUG	62	67	89	SAB	64	87	90
DUV[a]	59	67	86	FUT	62	93	86	SIF[a]	64	40	90
DYC	59		92	JUR[a]	62	87	92	TIX	64	73	89
FAX	59	53	91	KUF	62	53	87	TOX	64	87	93
FYG	59	67	84	LYK[a d]	62	60	97	VIL	64	93	88
GAF[a]	59	27	78	MOK[a]	62	67	87	WAH	64	47	83
HIX[a]	59	40	92	MYT	62	67	95	WAQ	64	60	79
KOZ[a]	59	80	82	NAD	62	60	70	WOF	64	73	76
LIR	59	60	92	PAH	62	40	85	YOK	64	93	85
MOZ	59		84	TEM[a]	62	73	89				
NYT[a]	59	80	93	TUR	62	93	87	FOL	65	93	95
SYC	59	73	80	VOM	62	53	86	FON	65	93	92
TAW[a]	59	40	76	YAL	62	67	85	HET	65	30	92
TIB	59	73	78	YUR[a]	62	53	86	HUD	65	87	93
TIG	59	100	82					JEB[a d]	65	33	59
				BEF	63	73	82	KAF	65	93	87
CYT[a]	60	80	92	BIC	63	87	83	KEL	65	87	88
DOX	60	73	85	BOD	63	80	93	KIR	65	73	78
FYT	60	73	90	BOZ	63	53	77	KOC	65	47	73
GAZ	60		94	CEM	63	60	81	KYD[d]	65	73	93
HYK[a]	60	60	86	FYR	63	93	96	LEP	65	87	96
KOX	60		85	GID	63	—[e]	77	LOD	65	80	94
LYT[a]	60	73	91	GOS	63	80	88	LOM[d]	65	73	81
NEH	60	27	83	GUF	63	27	79	LOX	65	80	87
NER	60	73	93	GUP	63	67	70	MEY	65		91
PYS	60		78	HIN	63	93	87	NAR	65	100	84
SUL	60	87	95	HOV[d]	63	87	90	NYC	65		89
VAP	60	53	89	JOL	63	93	93	PAB	65	60	60
WEP	60	53	80	JOV	63	67	93	PYG	65	80	92
WOC	60		59	LEC	63	93	79	PYN[a d]	65	60	93
ZAM	60	53	71	LUS[d]	63	87	93	SYP	65	100	90
				LUZ[d]	63	60	77	VIR	65	93	89
BAX	61	67	90	LYP[a d]	63	80	95	VIX	65	40	93
BIX	61	27	58	LYZ	63	60	87	VOG	65	40	85
DYG	61	73	82	NUD	63	67	73	WID	65	80	90
GAN	61	80	80	NYX	63	40	86	WOK	65	67	86
GEW	61	40	73	REQ	63	67	86	WUS[a]	65	47	80
GUZ	61	80	88	SEV	63	93	93				
HYS	61	60	88	SIZ	63	73	95	BEK[a]	66	47	94
JAL	61	53	85	TYR	63	73	92	FIV	66	93	92
LYR	61	60	94	VEN	63	67	93	GES	66	87	89
NEX	61	73	87	WAZ	63	47	77	JAD	66	73	85
PUM	61	73	89	WOL	63	87	90	LUN	66	93	93
RUP	61	67	84	YAS	63	60	99	LYD	66	93	92
RYT	61	80	91	ZOM	63	13	67	NUG	66	93	91
SAQ	61	60	89					PIZ	66		59
TYK[a]	61	40	92	CEX	64	13	69	QIT	66	87	96
VIG	61	27	84	DAH[a]	64	33	74	RIZ[a]	66	73	85
YAR	61	93	—[e]	GOF	64	67	83	RYD	66	53	92
ZEB	61	53	73	HAB	64	67	94	TOB	66	73	87
				KAV[d]	64	73	80	VOC	66	27	78
BAP	62	67	72	KEM	64	47	80				
BIK	62	67	90	KYT	64	80	91	CAK[a]	67	87	89
BYD[a d]	62		94	LIF	64	100	98	CIK[a]	67	33	84
CEZ	62	47	81	NOM	64	93	90	DAP	67	80	89

TABLE 1—Continued

Trigrams	Archer	Glaze	Kreuger
DAW	67	80	89
DUR	67	87	92
DYN	67		94
FUM[a]	67	80	90
HUK	67	60	81
KAS	67	87	83
LEF[a]	67	87	95
MEC	67	7	85
MEX[a]	67	100	96
MUN	67	47	94
NUR[a]	67	53	86
NYL[a]	67	73	90
PEY	67	87	92
RAL[d]	67	100	80
ROF	67	53	84
TIR[a d]	67	93	89
TYN	67	67	94
VER	67	87	94
WIK	67	40	90
WOM	67	100	92
WUF	67	60	86
YUK	67	40	59
BIM	68		86
CUL	68	87	96
DEY	68	87	88
DIR	68	—[e]	89
FEY	68	60	70
FIC	68	87	91
FOS	68	80	96
FYN	68	80	92
GUR	68	73	78
JAQ[a]	68	67	87
JOS	68	80	86
JYP	68	67	94
LAZ	68	93	97
PES	68	100	93
RET	68	87	95
SAR	68	100	90
SEG	68	67	88
SUZ[a]	68	67	65
TYL[a]	68	80	94
VAM	68	73	71
VEW	68	80	81
VOY	68	73	88
WOZ[d]	68	27	74
BOK	69	87	89
CET[a]	69		81
DET	69	93	97
DYK[a]	69	87	92
FES	69	100	86
FOD	69	80	89
HOD	69	87	93
HUC	69	7	80
JYM	69	87	96
KOM	69	80	89
LUB	69	47	88
NEG	69	87	90
NUF[a]	69	93	93
RIL	69	80	83
RIV	69	87	95
SAF	69	87	86
SOF	69	100	96
SYL	69	87	96
SYR	69	73	96
TOK	69	87	95
WIR	69	87	87
WUR	69	67	82
WUT	69	20	70
DYM	70	73	95
HEV	70	73	88
HUS	70	73	97
KEP	70	87	88
KUB	70	53	79
LOF	70	87	98
RYP[a]	70	80	97
SOT	70		
SUT	70	100	92
TAV	70	60	71
VON	70	47	79
WOD	70	87	89
YER	70	67	84
ZAP	70	33	81
BIP[a]	71	20	57
CER	71	87	86
CIV	71	67	87
FAS	71	100	93
FEZ	71		
HES	71	27	87
KOF	71	80	89
LIQ	71	100	95
NEB	71	80	86
TAF	71	67	97
BIS	72	93	81
CIL	72		93
CYN[a]	72	87	97
DAS	72	60	86
DOK	72	73	96
HYD	72		98
LAV	72	80	92
MAZ	72	80	97
NAC[a]	72	47	90
NAV	72	100	91
NES	72	80	95
NOP	72	60	88
REL	72	73	95
TID	72		93
VOT	72	67	93
WEY[a]	72	73	89
CED[a]	73	60	83
COV	73	93	95
CUN[d]	73	60	78
DUS	73	93	98
GYN	73	87	83
JUN	73	80	97
KOD[a]	73		80
LUM[d]	73	80	84
NAM	73	87	85
REK	73	87	90
RUD	73	100	98
SIV	73	73	87
YOW	73	20	85
CAY	74	67	85
COS	74	93	94
COZ	74	93	96
DAF	74	53	96
DAL	74	80	93
DUP	74	53	85
DUX	74	60	89
FEN[a]	74	73	95
HEK	74		90
HOF	74	87	86
HOX[a]	74	73	91
KOL	74	80	91
MAJ	74	80	89
MUL	74	73	86
NAK	74		89
PAG	74		85
PIR[a]	74	80	91
SIB	74	60	74
TEK	74	40	88
TYM[a]	74	67	96
VIK	74	100	95
WAP[a]	74	33	91
BEY	75		
CAS	75	67	97
CEN	75	100	91
CIP	75	67	74
CYD[a]	75	53	88
DES	75	60	90
DOB	75	100	82
FOP	75		
HIZ	75	60	84
HOK	75	73	91
HUP	75	80	97
HUX	75	60	88
KOR	75	47	89
LAN[a]	75	93	97
LIB[a]	75	93	91
MOS	75	87	95
NOK	75	—[e]	98
PEL	75	80	86
TIZ[a]	75	47	68
VAG	75	73	94
VIS	75	100	91
BIF	76	80	80

TABLE 1—Continued

Trigrams	Archer	Glaze	Kreuger	Trigrams	Archer	Glaze	Kreuger	Trigrams	Archer	Glaze	Kreuger
DAZ[a]	76		96	KIP	79	80	91	RAF	81	80	96
FAK	76	93	94	NOC	79	87	—[e]	SEM[d]	81	100	90
JUS	76	100	97	NUL	79	93	89	SIM	81	67	95
KER	76	53	89	PAX[d]	79	80	83	TOS[a]	81	93	95
KOG	76	40	74	REY[a]	79	80	95	VAC	81	100	97
LAR	76	93	88	RIF	79	87	94	WOR	81	87	93
MAH	76	73	93	SOG	79	73	86	WOT	81		94
MER	76	87	91	SUK	79	60	95	WUN	81	60	96
MUR[a]	76	93	92	TER	79	100	95	ZIG	81	60	82
NUB	76	13	73	VEG	79	87	84	ZOW	81	7	83
PAV	76	93	86								
RAB	76	93	93	BEC[a]	80	100	92	CIR	82	93	86
RES	76	87	94	CIS	80		97	COL	82	100	97
ROP	76	100	96	DER	80	87	91	DEK[a]	82	93	90
RUL[a]	76	93	83	GAT[a]	80		92	DIZ	82	80	97
TEW[a]	76	27	80	GIB	80	87	90	DOP	82	93	97
TIF[a]	76	80	89	GIM	80	67	96	FAM	82	100	99
VAS	76	93	96	JAS	80	93	96	GON	82	93	97
YAW	76			JOK	80	93	96	GUL	82	100	95
				KAW	80	53	86	HAK	82	67	93
BUK	77	80	89	KOB	80	53	83	JER	82	93	93
CAV	77	80	96	KON	80	53	86	JIB	82	60	84
FAC	77	87	92	KUD	80	53	82	LOK	82	80	97
FET	77	60	94	LEX	80		90	MUC	82	80	91
GAV	77	67	87	MIK	80	80	95	PUD	82	93	95
KUS	77	60	94	MOD	80	100	96	ROK	82	73	94
LEV	77	93	94	NEV	80	87	95	ROM	82	100	95
RYM	77	93	93	RAD[d]	80	100	95	VIN	82	100	93
WIF	77	73	93	RAV[d]	80	100	96	VOL	82	93	97
YEH	77	80	85	ROV	80	100	94				
				ROZ[a]	80	67	89	BER[a]	83	100	92
BIZ	78	100	95	TES	80	100	98	BOL	83	100	96
COK[d]	78	73	93	TIS	80	47	88	BOT[a]	83	87	91
DEP	78	100	95	TUK	80	87	95	DAG	83	67	90
DEX	78	73	89	TYP[a]	80	93	97	DIV	83	93	95
FOK	78	80	83	YEW	80		93	DUF	83	47	90
GOL[a, d]	78	87	93					FEB	83	73	81
KAL	78	33	93	BIR	81	87	91	FOB[a]	83		
KOW	78	60	96	COF	81	93	98	GAR	83		99
KOY	78	33	89	FOY	81	33	77	GOR	83	80	93
KUZ[a]	78		86	FUC[a]	81		94	HAR	83	73	93
LIM	78	100	98	GER	81	87	92	KAB[a]	83	47	87
MIR	78	93	94	GIR	81	87	87	KUM	83	—[e]	89
MOV	78	87	93	HAF	81	73	89	LAT	83	80	93
NOL	78	47	83	HOS	81	93	90	LIS	83	100	95
POS	78	93	94	HYP	81	87	99	LOR	83	80	93
REN[a]	78	80	86	JAK	81	73	96	NEY	83	53	91
TEC[d]	78	80	86	JUL	81	—[e]	93	NOG	83	67	83
YON	78	80	91	KUR	81	67	93	POC	83		92
YOR	78	47	91	LEM	81	80	87	PON	83	87	94
ZOR[d]	78	20	74	LEY	81	67	91	PUC	83		95
				MIC[d]	81	53	95	PUK	83	47	83
DIF	79	100	97	MUS	81	93	99	RAS[a]	83	93	95
FAL	79	93	97	NEK[a]	81	93	96	SYD[a]	83	60	96
FUK	79		87	NIB	81		80	VAR	83	93	85
HOY	79		88	NIG[a]	81	93	97	WAF	83	73	90
JAX	79	47	87	NOX	81	67	81	WAM	83	67	90
JES	79	93	95	NOZ[a]	81	80	94	WIZ[a]	83	87	94

TABLE 1—Continued

Trigrams	Archer	Glaze	Kreuger	Trigrams	Archer	Glaze	Kreuger	Trigrams	Archer	Glaze	Kreuger
WYN	83		98	BUF	87	73	91	KIC	89	60	91
				CUF	87	93	97	KOP[a]	89	67	98
BAW	84	60	95	GIP	87	60	95	LIC	89	93	97
DIS	84	100	97	HOL	87	100	98	LON	89	100	98
DIT	84	80	85	KUP	87	67	90	MES	89	60	97
FER	84	80	93	LYN[a]	87	87	94	MUF	89	93	97
HIR	84	93	91	MAK	87	100	97	NAH	89	13	85
HUL	84	80	98	MOL	87	93	95	NEC[a]	89	93	98
HUR	84	100	99	NIK	87	60	97	PEC[a]	89	73	96
KED[a,d]	84	47	92	ROS	87	93	95	POL	89	93	99
MOC	84	87	95	SER	87	100	96	SUD	89	93	96
NOS[a]	84	93	98	SEZ	87	67	95	TUF	89	87	93
NOV	84	100	88	SYN[a]	87	100	97	WAV[a]	89	87	94
PEK	84	87	97	TOL	87	80	98	YIP	89		89
POK	84	93	95	TUC[a]	87	80	98				
REM	84	93	100	VOW	87			BUL	90	100	97
SEP	84	100	99	WAK	87	100	88	CAF	90		95
SIK	84	80	96					CID[a]	90	80	87
TIK	84	80	97	BUC	88	80	93	DAT	90	73	94
TOC	84	53	88	COG	88			DIK	90	80	95
WAL	84		97	COR	88	87	96	DOV	90	100	98
WER	84	73	92	DAR	88	100	95	DUC	90	100	96
WES	84	80	91	DEF	88	93	91	FEM	90	93	97
				HEC	88		96	FIZ	90		93
BES	85	93	96	HIK	88	87	97	FUS	90	93	97
GEN	85	87	98	HOC	88		93	GOP	90	53	95
HAN	85	87	97	JEF	88	73	94	HAC	90	73	89
KAD	85	73	94	JEN[a]	88	87	93	HEX	90	53	86
KAM	85	47	92	JIP	88		91	HOB	90	100	87
MUK	85	60	91	LAS	88	87	99	JEM	90	80	94
POM[a]	85	80	92	LOP	88			JUT	90		
RAK	85	87	98	LUR[a]	88	80	96	LAC	90		97
TAL	85	100	93	LUV	88	73	96	LAK[a]	90	93	99
TOR	85	87	94	NIT	88	93	99	LOC[a]	90	93	100
WIC	85	80	96	RUS	88	100	96	PER	90		
WIM[a]	85	87	91	SEC	88	93	93	PIS	90		92
				SEN	88	80	97	POR[a]	90		95
CIG	86	87	96	SEY[a]	88	67	92	PUL	90	93	100
DAV	86	67	91	SOK[a]	88	73	99	ROG[a]	90	87	94
DOS	86	93	89	SOM[a]	88	80	99	SEL	90	100	88
FUD	86	80	87	TAK[d]	88	100	99	SUC	90	73	98
GYP	86		97	VIP	88	53	77	VEX	90		
HYM	86		92	WAN	88			WEN	90	80	94
JOC	86	73	96	YEP	88	80	93				
KOT	86	73	97	YUL	88	53	86	BAC	91	—[e]	93
KUT	86	60	92	ZAG	88	60	72	BAL	91	100	97
LUC	86		100					BUR	91	100	92
LUK	86	93	95	BAK	89		94	CAW	91		
MOT	86	80	95	CIN	89	100	96	CEL	91	80	95
REB	86	60	91	DOM	89	93	99	CUR	91		
RUF[a]	86	100	99	DOW	89	80	94	DUL	91	100	98
SAV	86	93	98	DUK[a]	89	87	98	HAW	91	80	98
SED	86	87	99	GEL	89	80	97	HOM	91	100	99
SOR[a]	86		97	GIV	89	100	99	HOR	91	87	95
WIP	86	87	95	HED	89	67	92	HUF	91	87	93
WUZ	86		91	JAC[a]	89	87	98	JIF	91	67	96
YAC	86	93	67	JED	89	53	72	LIK	91	100	96
YUP[d]	86	27	62	JIN	89	100	99	MAS	91	93	99

TABLE 1—Continued

Trigrams	Archer	Glaze	Kreuger
NEL	91	80	95
PIK	91	80	98
REG	91	100	94
RIC	91	93	88
ROL	91	67	98
ROX	91	73	95
SUR	91	100	98
YAM	91		
BOM	92	80	98
BOR	92	93	94
COM	92		97
CUM	92	93	94
DIX	92		97
DOR	92	87	98
FUL	92	80	97
HAP	92		99
KAR	92	53	95
KIL	92	93	99
LEW	92		98
LOB	92	93	97
NIC	92		97
NOR	92		
PAS	92	100	99
PED[a]	92	100	92
PUF[a]	92	100	100
RIN	92	87	88
SAN[a]	92	80	98
SIG	92	87	94
SIL	92	93	95
YEL	92	93	99
BAS	93	100	97
BOS	93		95
CAM	93		
CIT	93		94
CUS	93	100	98
CUZ	93	73	91
FEL	93	100	99
FIL	93	80	94
HAV	93	100	97
KIS	93	87	99
LAF	93	87	100
LIN	93	87	95
LIV	93	100	98
LOS	93	100	97
MOW	93		
NUM	93	67	90
PAC	93	100	97
PAK	93	87	98
PIL	93	100	99
RAC	93	100	95
REC	93	80	91
REV	93	100	96
VAL	93		96
WOP	93		92
YAH	93	27	88
BAH	94		94
BEV	94	100	90
BIL	94	93	93
COX	94		
DEM	94	73	98
DIC	94	100	91
DIL	94	80	94
DOL	94		100
FAG	94		
FUZ	94	93	96
HAZ	94	100	95
HEW	94		
HIL	94	100	99
JAB	94		
KAN	94	87	96
KAP	94		96
KID	94		
LOV	94	100	100
MAL	94	93	98
MIN	94	93	99
MOR	94		97
NAW	94	47	91
PIX	94	67	88
PUR	94	93	96
RAZ	94	87	99
REF	94	93	93
REP	94		98
RIT	94		98
ROC	94	87	97
SAK	94	93	98
SOL	94	93	100
SOP	94		
TUN	94	73	98
VIM	94		
WAT	94	100	95
WEL	94		95
WIS	94	100	94
CUD	95		
DIN	95		
DUN	95		
GAM	95		96
GIL	95	87	94
GOV	95	93	95
HEL	95		99
JAZ	95	93	97
JIL	95	87	98
JOG	95		
JUD	95		86
KIX	95	47	80
LAM	95	87	99
LEN	95	87	92
MAG	95	87	96
MEG	95	67	90
MEW	95		
MIG[a]	95	33	77
MIL	95	93	96
POX	95		97
SIC	95	93	93
VAT	95		
YAP	95	40	89
BOG	96		
BON	96		97
CAL	96		
DEC	96	100	94
DUB	96		
DUM	96		99
FIR	96		
HUN	96		
LIT[a]	96		99
LUX	96		99
MUT	96		
NAB	96		
NAT	96		99
SOY	96	80	87
SUP	96		100
VEL	96	87	92
BAM	97		93
CAD	97		
COB	97		
COY	97		
DEB	97	87	99
DEL	97	80	97
FAB	97	93	92
GAD	97		98
GIT	97		97
GOB	97	93	97
GUS	97		100
HEY	97		
HON	97	100	98
HUG	97		
HUM	97		
JEL	97	100	98
MAW	97		
MEL	97	67	95
MIS	97	80	99
MON	97	100	98
NIX	97		
PAM	97	80	90
PAW	97		
PEW	97		
POD	97		
PUS	97	100	
SOC	97	100	98
TAC	97	100	98
TAD	97		96
TAX	97		
TIL	97	80	100
TOG	97	73	97
TOW	97		
TUX	97	80	96
VIC	97	100	97
WAS	97		
WIL	97	100	96

TABLE 1—Continued

Trigrams	Archer	Glaze	Kreuger	Trigrams	Archer	Glaze	Kreuger	Trigrams	Archer	Glaze	Kreuger
WON	97			COD	99			PAT	99		
YAK	97	53		CUB	99			PAY	99		
YEN	97		90	DAB	99			PEG	99		
YET	97			DAN	99			PEN	99		
YUM	97	33	89	DEW	99			PIC	99	93	96
				DIM	99			PIG	99		
BOP	98	53	69	DUZ	99	47	80	PIT	99		
COT	98			FAN	99			POT	99		
DOC	98		100	FAT	99			PUG	99		96
DOZ	98	100	94	FED	99			PUT	99		
FAY	98			FEW	99			RAG	99		
GAB	98	93	100	FIB	99			RAH	99	60	100
GYM	98	100	97	FIG	99			RAN	99		
HEM	98			FIN	99			RAP	99		
HEN	98			FOG	99			RAW	99		
HIS	98			FUR	99			RED	99		
HUB	98			GAL	99		98	RID	99		
JAW	98			GAP	99		100	RIG	99		
JAY	98			GAY	99			RIM	99		
JIG	98			GOD	99			ROD	99		
JOT	98			GOT	99			RON	99	80	85
KAT	98		100	GUM	99			ROW	99		
KIM	98	60	89	GUT	99			RUB	99		
LAX	98			GUY	99			RUN	99		
LED	98			HAG	99			RUT	99		
LES	98	87	97	HAL	99		100	SAT	99		
LUG	98			HEP	99		87	SAY	99		
NAY	98			HIC	99		96	SET	99		
NIL	98	87	97	HID	99			SEW	99		
NIP	98			JAG	99	67	97	SIN	99		
NOB	98		91	JAN	99	100	99	SIP	99		
PUN	98			JAP	99			SIT	99		
REX	98			JAR	99			SIX	99		
SAC	98		99	JON	99	93	96	SOD	99		
SAL	98		97	KEG	99			SOW	99		
SAX	98		99	KEY	99			SUN	99		
SID	98	87	97	KIN	99			TAN	99		
SOX	98		99	LAD	99			TEL	99	93	99
SUB	98	100	91	LAY	99			TEN	99		
TAM	98	100	100	LEG	99			TIC	99	100	98
TOD	98			LID	99			TIM	99		
TON	98			LIP	99			TOM	99		
TUM	98	73	97	LOW	99			TOY	99		
				MAC	99	80	100	TUG	99		
BAD	99			MAN	99			WAC	99	67	89
BAG	99			MAR	99			WAD	99		
BEL	99	100	97	MAX	99	80	98	WAG	99		
BEN	99			MID	99	87	99	WAY	99		
BID	99			MIX	99			YES	99		
BIG	99			MOB	99						
BOW	99			MOP	99			BAN	100		
BOX	99			MUG	99			BAR	100		
BUG	99			NAG	99			BAT	100		
BUS	99			NED	99			BAY	100		
BUT	99			NEW	99			BED	100		
BUY	99			NOW	99			BEG	100		
BUZ	99	93	96	PAN	99			BET	100		
CAR	99			PAR	99			BIN	100		

TABLE 1—Continued

Trigrams	Archer	Glaze	Krueger
BIT	100		
BOY	100		
BUD	100		
BUM	100		
BUN	100		
CAB	100		
CAN	100		
CAP	100		
CAT	100		
CON	100		97
COP	100		
COW	100		
CUP	100		
CUT	100		
DAM	100		
DAY	100		
DEN	100		
DIG	100		
DIP	100		
DOG	100		
DON	100		
DOT	100		
DUG	100		
FAD	100		
FAR	100		
FIT	100		
FIX	100		
FOR	100		
FOX	100		
FUN	100		
GAS	100		
GEM	100		
GET	100		
GIN	100		
GUN	100		
HAD	100		
HAM	100		
HAS	100		
HAT	100		
HAY	100		
HER	100		
HIM	100		
HIP	100		
HIT	100		
HOG	100		
HOP	100		
HOT	100		
HOW	100		
HUT	100		
JAM	100		
JET	100		
JEW	100		
JIM	100		
JOB	100		
JOY	100		
JUG	100		
KAY	100	60	97
KEN	100	100	99
KIT	100		
LAB	100		100
LAG	100		
LAP	100		
LAW	100		
LET	100		
LIZ	100	80	94
LOG	100		
LOT	100		
MAD	100		
MAP	100		
MAT	100		
MAY	100		
MED	100	93	98
MEN	100		
MET	100		
MIT	100		
MUD	100		
NAP	100		
NET	100		
NOD	100		
NOT	100		
NUT	100		
PAD	100		
PAL	100		
PET	100		
PIN	100		
POW	100	60	95
PUB	100	93	85
RAM	100		
RAT	100		
RAY	100		
RIB	100		
RIP	100		
ROB	100		
ROT	100		
ROY	100		
RUG	100		
RUM	100		
SAD	100		
SAG	100		
SAM	100		
SAP	100		
SAW	100		
SEX	100		
SIR	100		
SOB	100		
SON	100		
SUM	100		
TAB	100		93
TAG	100		
TAP	100		
TAR	100		
TED	100		
TEX	100	100	97
TIN	100		
TIP	100		
TOP	100		
TUB	100		
VAN	100		
VET	100	93	99
WAR	100		
WAX	100		
WEB	100		
WED	100		
WET	100		
WIG	100		
WIN	100		
WIT	100		
ZIP	100		

[a] Significant sex difference.
[b] Blank space indicates trigram was not evaluated.
[c] Item has two values.
[d] Significant change in meaning.

In the "Glaze" and "Krueger" columns a blank space (Footnote b) indicates that Glaze or Krueger did not evaluate the item. Both authors deliberately excluded most three-letter words. Footnote c in either of these columns indicates that two different values for the item were reported by each author. Glaze had 29 duplications (and most of them were not eliminated in Hilgard's chapter), and Krueger had 14 duplications.

In the "Trigram" column Footnote a means that there may be a significant difference between the sexes for that particular trigram. A chi square (corrected for discontinuity) for the 2×2 contingency table

of sex × meaning was computed for all 2,480 items. If the chi square exceeded 3.841 (the value needed at the .05 level for 1 *df*), the trigram is annotated with Footnote a. There are 226 such items. Theoretically we might expect 124, i.e., .05 × 2,480 chi squares to be significant at the .05 level by chance. Therefore, it is unlikely that there is a true sex difference for all 226 trigrams listed in Tables 2 and 3.

TABLE 2

192 TRIGRAMS WHICH APPEARED TO BE MORE MEANINGFUL TO WOMEN

Trigram	Association Value			Chi Square	Trigram	Association Value			Chi Square
	Overall	Women	Men			Overall	Women	Men	
BAQ	51	59	44	4.744	HYR	57	65	49	4.834
BEC	80	86	73	4.823	JAC	89	94	84	4.866
BEK	66	76	56	9.065	JAQ	68	78	57	9.321
BEQ	41	50	32	6.192	JEN	88	95	81	9.838
BER	83	89	78	4.033	JUK	40	48	32	4.927
BOH	53	61	44	5.368	JUR	62	72	51	9.470
BOT	83	90	77	5.633	JYL	40	51	30	9.315
BYD	62	75	49	14.331	KAB	83	89	78	4.033
BYL	59	69	49	7.644	KAC	48	56	39	6.013
BYQ	24	33	15	9.144	KAG	41	49	32	5.542
CAK	67	76	57	7.521	KAQ	25	31	19	4.173
CAX	33	40	26	4.112	KED	84	91	78	5.899
CED	73	80	66	4.570	KEW	54	62	45	5.381
CEQ	19	25	13	4.335	KOD	73	81	66	5.303
CES	57	65	49	4.834	KOP	89	94	84	4.866
CET	69	76	61	4.829	KOV	56	64	49	4.238
CID	90	96	84	7.596	KOZ	59	67	51	4.892
CIK	67	74	60	4.112	KUZ	78	89	67	14.170
CIX	59	67	52	4.315	KYL	49	56	42	4.168
CIZ	39	46	31	4.383	KYN	50	58	41	6.001
CYD	75	87	64	14.402	KYR	24	31	18	4.280
CYJ	7	11	3	4.585	KYS	46	57	34	10.741
CYN	72	81	63	7.402	LAH	50	59	41	6.685
CYP	56	66	47	6.799	LAK	90	95	85	5.275
CYS	48	56	41	4.172	LAN	75	82	68	5.556
CYT	60	69	51	6.975	LEF	67	74	60	4.112
CYX	31	38	23	4.909	LIB	75	82	69	4.901
DAH	64	73	56	6.539	LIT	96	100	93	6.361
DAZ	76	82	69	4.280	LIY	46	55	37	6.042
DEK	82	90	75	7.185	LOC	90	94	85	4.099
DIB	50	57	42	4.741	LOZ	40	47	32	4.347
DUH	50	63	37	13.500	LUR	88	94	82	5.291
DUK	89	94	84	4.866	LYC	57	65	50	4.260
DUV	59	70	48	10.144	LYJ	7	12	3	5.468
DUW	53	61	44	5.368	LYK	62	70	54	5.681
DYK	69	76	62	4.241	LYN	87	94	79	10.197
DYL	58	67	49	6.152	LYP	63	70	56	4.467
DYV	38	44	31	3.872	LYS	46	54	39	4.190
FEN	74	81	66	6.101	LYT	60	68	53	4.347
FOH	43	50	35	4.260	LYV	53	61	44	5.368
FUM	67	76	57	7.521	MAQ	38	47	29	7.096
GOH	41	50	32	6.192	MIH	28	35	20	5.192
GOL	78	84	72	3.916	MIQ	34	41	27	4.056
HAQ	45	54	36	6.063	MOK	62	71	52	7.827
HIX	59	67	52	4.315	MOQ	35	46	24	10.739
HOX	74	81	68	4.074	MUR	76	84	69	6.571
HYC	57	66	49	5.472	MYC	48	60	36	11.590
HYK	60	68	52	4.927	MYH	31	38	23	4.909

TABLE 2—Continued

Trigram	Association Value			Chi Square	Trigram	Association Value			Chi Square
	Overall	Women	Men			Overall	Women	Men	
MYK	48	58	38	8.178	SAN	92	96	88	4.086
MYL	57	66	49	5.472	SEY	88	93	82	4.233
MYN	54	62	46	4.774	SOH	50	61	40	8.964
MYQ	26	32	19	4.074	SOK	88	93	82	4.233
MYR	58	67	50	5.505	SOM	88	94	81	7.389
MYS	55	62	47	4.203	SOR	86	92	80	5.424
NAC	72	80	65	5.192	SOZ	38	49	27	10.399
NEC	89	94	83	5.672	SUW	35	42	28	4.003
NEK	81	89	74	6.903	SUZ	68	78	58	8.518
NOH	52	60	44	4.751	SYD	83	90	76	6.392
NOS	84	92	77	7.854	SYN	87	93	81	5.736
NOZ	81	88	73	6.650	SYT	58	66	50	4.861
NUF	69	77	60	6.203	TAW	59	68	50	6.192
NUH	38	46	29	6.400	TEM	62	69	54	5.009
NUR	67	75	58	6.021	TEP	45	53	38	4.203
NYL	67	80	55	14.183	TEW	76	82	69	4.280
NYT	59	67	51	4.892	TIF	76	82	69	4.280
PEC	89	95	83	7.007	TIR	67	74	59	4.688
PED	92	99	85	12.514	TIZ	75	83	68	6.401
PEZ	51	58	44	4.168	TOQ	27	34	20	4.570
PIR	74	81	67	4.671	TOS	81	90	72	9.754
POH	52	59	44	4.172	TOZ	40	49	31	6.975
POM	85	92	78	7.010	TUC	87	92	81	3.983
POR	90	94	85	4.099	TYK	61	75	47	16.383
POZ	50	59	40	7.408	TYL	68	77	59	6.900
PUF	92	96	88	4.086	TYM	74	81	67	5.424
PUH	42	50	33	5.505	TYP	80	89	71	9.408
PYL	64	72	56	5.799	TYZ	39	48	31	6.285
PYN	65	72	58	4.003	VOZ	27	35	19	5.970
QOR	25	36	15	11.806	VYC	38	46	29	6.400
QUL	23	30	17	4.398	WAV	89	94	83	5.672
QUT	39	49	30	7.759	WEJ	42	50	34	4.861
QUZ	36	43	29	3.956	WEK	58	66	51	4.286
QYS	18	25	11	6.133	WEX	38	45	31	4.423
RAQ	54	61	46	4.190	WEY	72	81	63	7.402
RAS	83	89	78	4.033	WIM	85	94	76	11.589
REN	78	84	71	4.527	WIX	44	51	36	4.238
REY	79	89	69	12.181	WIY	42	49	34	4.286
RIZ	66	75	57	6.704	WIZ	83	89	78	4.033
ROG	90	94	85	4.099	WOS	54	62	46	4.774
ROZ	80	86	74	4.181	WUL	53	61	45	4.761
RUF	86	92	80	5.424	WUS	65	77	54	11.765
RUL	76	82	69	4.280	WYL	49	57	41	5.354
RYC	44	53	34	6.799	WYS	33	41	25	5.371
RYP	70	78	62	5.634	XAR	25	31	19	4.173
RYS	38	48	27	9.560	YAQ	47	55	40	4.180
RYZ	42	50	33	5.505	YUR	62	70	53	6.340
SAJ	31	40	22	7.010	YUV	26	32	19	4.074

TABLE 3

34 TRIGRAMS WHICH APPEARED TO BE MORE MEANINGFUL TO MEN

Trigram	Association Value			Chi Square	Trigram	Association Value			Chi Square
	Overall	Women	Men			Overall	Women	Men	
BIP	71	63	79	5.737	MEX	67	58	75	6.021
BIW	15	9	20	4.439	MIG	95	91	99	6.130
BUW	21	15	27	4.042	NIG	81	73	88	6.650
CIF	48	38	57	7.423	NUX	30	23	37	4.313
CUG	23	16	30	5.174	QIG	14	7	20	6.542
DEG	45	33	56	10.778	QIP	49	42	56	4.168
FOB	83	78	89	4.033	SIF	64	55	73	7.244
FOC	55	44	66	9.881	SYF	41	33	49	4.892
FUC	81	74	88	5.900	VEH	29	20	37	6.538
FUX	47	38	56	6.025	VIB	40	32	47	4.347
GAF	59	45	72	14.982	WAP	74	67	81	4.671
GAT	80	73	86	4.823	XAW	8	4	13	4.909
HAJ	18	11	25	6.133	XUJ	3	0	6	5.315
HEB	52	43	61	6.694	YEG	31	23	38	4.909
JAT	41	33	49	4.892	ZEK	52	44	59	4.172
JEB	65	58	72	4.003	ZIH	6	2	9	4.324
JIZ	36	28	44	5.799	ZIV	39	31	47	4.966

For 192 of the items for which a sex difference was indicated, the difference was in favor of women. As may be seen, the trigrams have been listed alphabetically. Table 2, which lists the trigrams which appeared to be more meaningful to women, shows the overall association values, values for the two sexes, and the chi squares (all are significant at or beyond the .05 level with 1 *df*). Table 3 shows comparable values for the 34 trigrams which appeared to be more meaningful for men.

Measures of reliability. One measure of the reliability of judgment was obtained from the test-retest correlation of the number of "Yes" responses made by *S* to the first film strip and to the identical strip which was repeated after *S* saw all of the others. For 16 of the groups this measure was based on a 300-item "test"; for two of the groups there were only 80 items in the "test." The Pearson product-moment correlation which describes this consistency of judgment over a 48-hr. period was .882 ($214\ df, p < .01$).

Another measure of reliability was obtained by analyzing the responses for each individual trigram. Since two different sequences started with the same film strip, we have eight groups of 24 *S*s each judging 300 different trigrams twice (and one group of 24 *S*s making two judgings of the 80 trigrams of the short film strip). A fourfold point coefficient or tetrachoric correlation based on but 24 cases and many with zero cell entries is too unstable to be worthwhile. On the other hand a measure of the change in meaningfulness of a particular item could be evidence of reliability which would be stable since it would be less affected by zero cell entries. Such a measure of reliability was computed: a chi square test for a difference in number of "Yes" responses on the two "testing sessions." A chi square test for correlated values was used; and, if Footnote d appears in the "Trigram" column of Table 1, it indicates a significant *change* in meaningfulness over a 48-hr. period. Most of the changes were increases, i.e., more "Yes" responses on the second testing than on the first.

Either notation (Footnotes a or d) in the "Trigram" column is a caution signal to the potential user since it indicates either a sex difference or a lack of reliability.

Comparability of the three association values. One immediate question is: "Was the task worthwhile?" One answer to the

question is the three overall correlations among the three studies, but this is a somewhat deceptive answer. When an *E* wants to construct a list of trigrams, he rarely samples from the entire possible population. The usual practice is to select items with a predetermined level of meaningfulness. Accordingly, a better answer to the question of the worthwhileness of this re-evaluation is to be found in the correlations of the three sets of values in the more restricted ranges from which an *E* might construct lists, e.g., high, medium, or low association values. In the present study there are 510 trigrams with an association value between 1% and 25% (none was found with 0%) for which Glaze and Krueger also report values. A Pearson product-moment correlation for these 510 items was computed between the association values found in the present study and each of the other two. For purposes of comparison, the Glaze and and Krueger values were also correlated. Comparable correlations were computed for each of the other quartile intervals. These values, along with related means and standard deviations, are shown in Table 4.

As may be seen from Table 4, although the overall correlations are fairly high, .788 to .850, the correlations for the restricted ranges are rather low, from .162 to .590, indicating that Glaze's and Krueger's values may not provide the best description of the meaningfulness of trigrams.

TABLE 4

CORRELATIONS AND MEANS FOR EACH OF FOUR RESTRICTED RANGES AND THE ENTIRE RANGE OF ASSOCIATION VALUES OF THE THREE SCALES

Range	*N*	r_{AG}	r_{AK}	r_{GK}	Means		
					Archer	Glaze	Krueger
1- 25%	510	.341	.590	.435	14.6	21.6	51.6
26- 50%	561	.354	.406	.489	37.4	39.5	71.9
51- 75%	440	.311	.341	.522	62.9	66.7	85.7
76-100%	422	.163	.286	.559	87.3	82.1	93.6
1-100%	1933[a]	.788	.850	.790	48.1	50.3	74.5

[a] After the elimination of Glaze's 29 two-valued items and Krueger's 14 two-valued items, there were 1,933 items for which all three studies reported a single value.

SUMMARY

The association values for 2,480 CVC trigrams were determined. Two measures of reliability of these values were also obtained. The association values obtained in the present study were correlated with those previously reported by Glaze and Krueger. The overall correlation was fairly high, but for four restricted, and more useful, ranges the correlations were rather low. It was concluded that the present scale offers a better estimate of the meaningfulness of trigrams than was previously available.

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